PHOTOFACT® with CIRCUITRACE®

For Supplier Address See PHOTOFACT Index

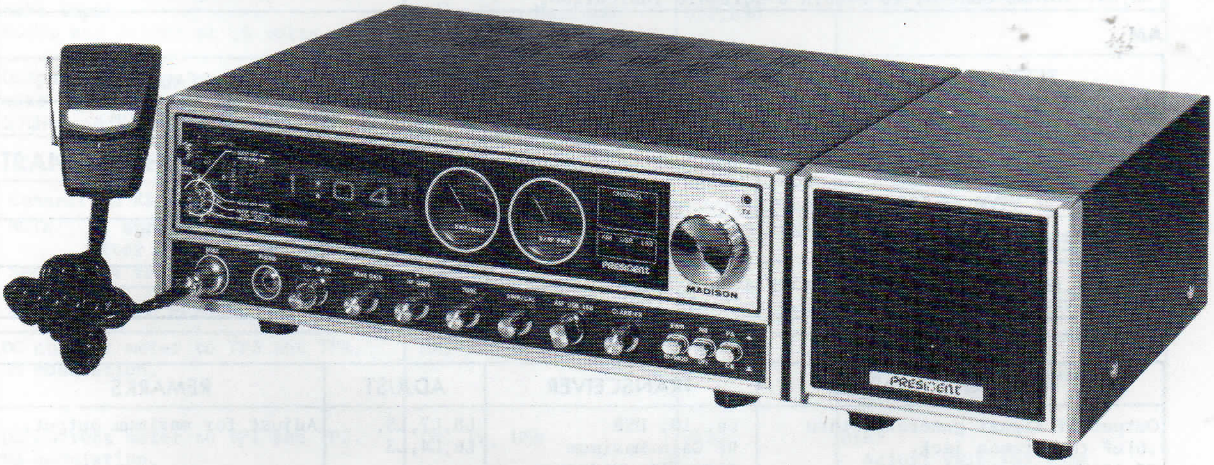
NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.
(Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.



MODEL MADISON

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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8CF773

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment.
Maintain line voltage at 120V AC. Allow a 15-minute warm-up period.
Adjustments made with 13.8-volt DC input.
Connect low sides of test equipment to ground unless specified otherwise.
Connect 50-ohm dummy load or antenna before keying transmitter.

Suggested Alignment Tools:	GC ELECTRONICS:
L27, L30, L32	5009, 5000, 8276, 8728, 8728A
L1 thru L8, L16, L17, L24, L37, L39	9440
CT1 thru CT7	5000, 8276

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF VTVM to TP6.	Ch. 1 Clarifier-Midrange AM	L24	Adjust for maximum.
Input of DC meter to TP7.	Ch. 1	L17	Adjust for 2.0 volts.
Input of RF VTVM to TP8.	Ch. 19	L16	Adjust for maximum.
Input of frequency counter to TP8.	Ch. 19	CT6	Adjust for 34.9850MHz ±20Hz.
Input of frequency counter to TP8.	Ch. 19, USB	CT4	Adjust for 34.9875MHz ±20Hz.
Input of frequency counter to TP8.	Ch. 19, LSB	CT5	Adjust for 34.9825MHz ±20Hz.
Input of frequency counter to TP8.	Ch. 19, LSB, Xmit	VR9	Adjust for 34.9825MHz ±20Hz.
Input of frequency counter to TP9.	Ch. 19, USB, Xmit	CT2	Adjust for 7.8025MHz +5Hz -0Hz.
Input of frequency counter to TP9.	Ch. 19, LSB, Xmit	CT3	Adjust for 7.7975MHz +0Hz -5Hz.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.

AM

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 23.5MHz, no modulation. Output 200uV. Input of RF VTVM to TP5.	Ch. 19, AM RF Gain-Maximum NB-On	L1,L2	Adjust for maximum.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.

SSB

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.186MHz, no modulation. Output .25uV.	Ch. 19, USB RF Gain-Maximum Clarifier-Midrange Volume-Maximum	L8,L7,L5, L6,L4,L3	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.186MHz, no modulation. Output .25uV.	Ch. 19	CT1	Adjust for .5 watts audio.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, no modulation. Output 1000uV.	Ch. 19, USB RF Gain-MINIMUM Volume-Maximum	VR2	SSB AGC Adjust VR2 for .5 watts audio.
Output of signal generator thru .01uF to antenna jack. 27.186MHz, no modulation. Output 100uV.	Ch. 19	VR1	S METER Adjust for 9 on S scale of meter.

RECEIVER ADJUSTMENTS (cont)

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.186MHz, no modulation. Output 1000uV.	Ch. 19	VR3	SQUELCH RANGE Set squelch control VR404 fully clockwise. Adjust VR3 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output .5uV.	Ch. 19, AM	VR5	AM AGC Adjust VR5 for .5 watts audio.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.
See page 4 for channel frequencies.

AM

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of spectrum analyzer to antenna jack.	Ch. 19	L27	Adjust for MINIMUM at 54MHz.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.
See page 4 for channel frequencies.

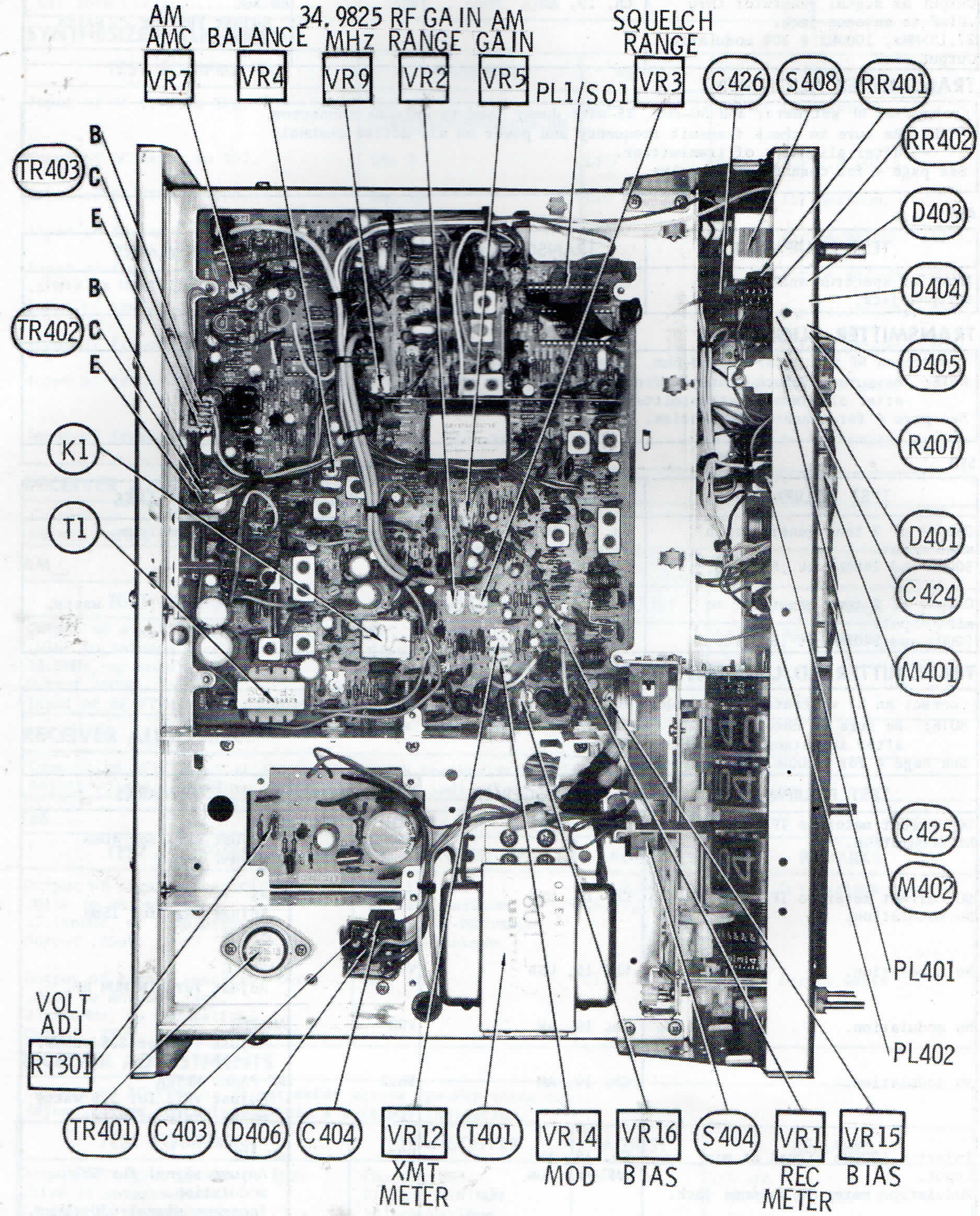
SSB

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of 2 tone generator to mike input. 500Hz and 2400Hz at .5 volts.	Ch. 19, USB Mike Gain-Maximum	L39,L37, L32,L30	Adjust for maximum.
Output of 2 tone generator to mike input. 500Hz and 2400Hz at .5 volts.	Ch. 19, USB	CT7	Adjust CT7 for 11.0 watts.

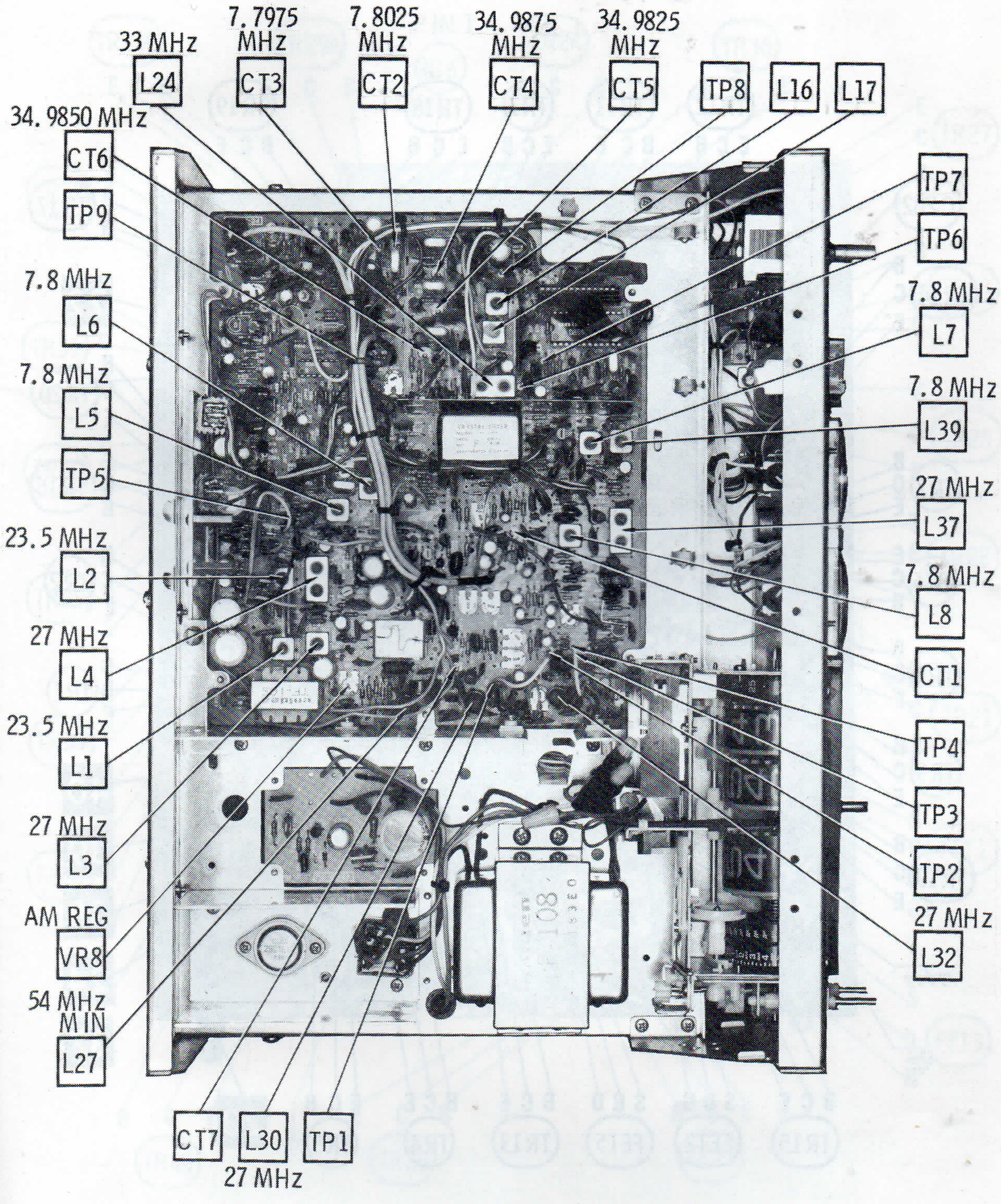
TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustments of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
DC current meter to TP3 and TP4. No modulation.	Ch. 19, USB	VR15	BIAS Adjust VR15 for 40mA ±10mA.
DC current meter to TP1 and TP2. No modulation.	Ch. 19, USB	VR16	BIAS Adjust VR16 for 15mA ±10mA.
No modulation.	Ch. 19, USB	VR4	BALANCE Adjust for MINIMUM RF.
No modulation.	Ch. 19, AM	VR8	AM REG Adjust VR8 for 3.8 watts.
No modulation.	Ch. 19, AM	VR12	RF PANEL METER Adjust VR12 for 3.8 watts on RF scale of meter.
Inject a 1000Hz signal at mic input. Modulation meter to antenna jack.	Ch. 19, AM AMC-Maximum	VR7	AM AMC Adjust signal for 50% modulation. Increase signal 630 times. Adjust VR7 for 95% modulation.
Modulation meter to antenna jack. Inject a 1000Hz signal at mic input.	Ch. 13, AM	VR14	MOD Adjust VR14 so that MOD panel meter agrees with external modulation meter.

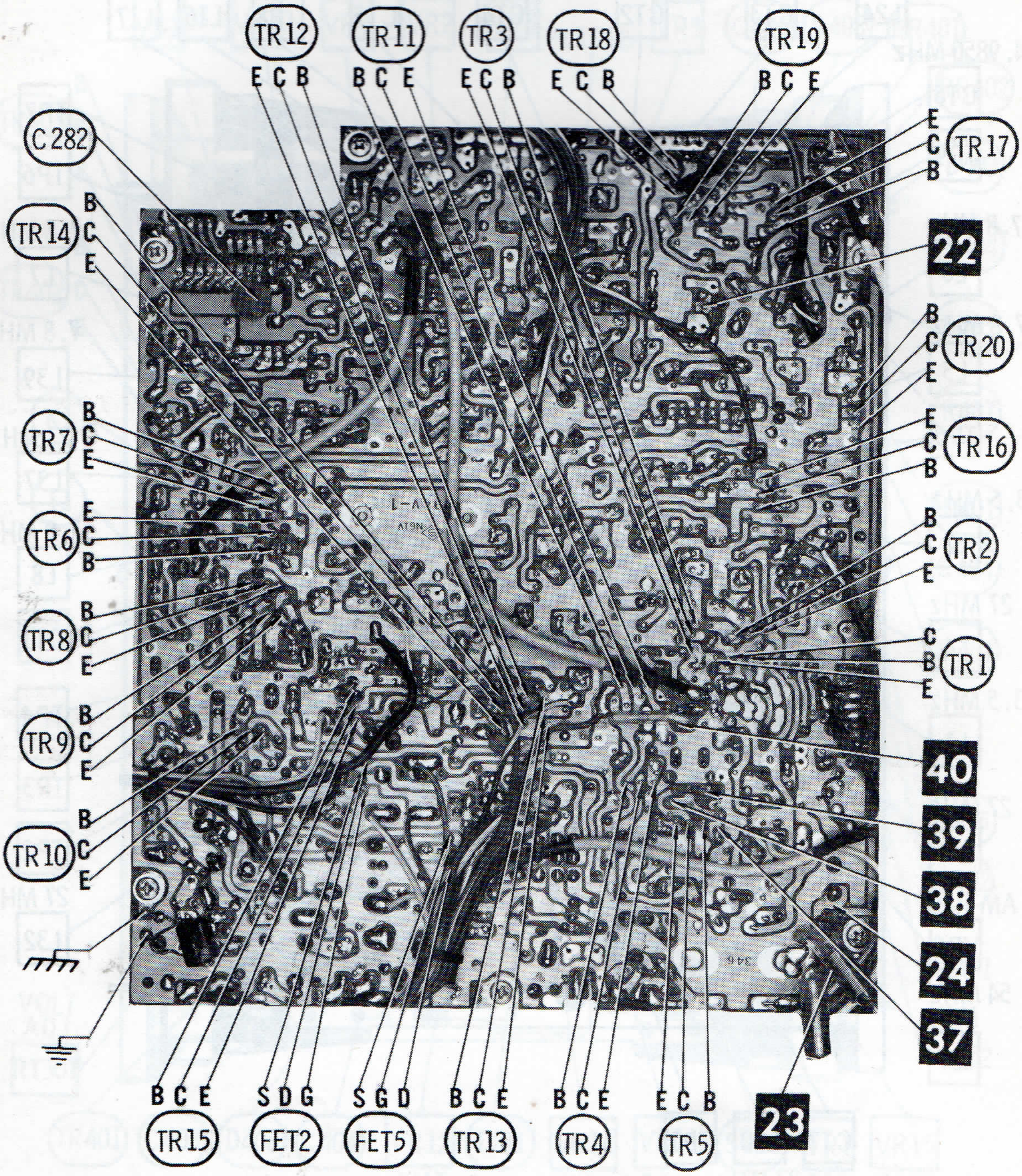

AM AMC
VR7
BALANCE
VR4
34.9825 MHz
VR9
RF GAIN RANGE
VR2
AM GAIN
VR5
PL1/SO1
SQUELCH RANGE
VR3
C426
S408
RR401
RR402
D403
D404
D405
R407
D401
C424
M401
C425
M402
PL401
PL402
TR403
B
C
E
TR402
B
C
E
K1
T1
VOLT ADJ
RT301
TR401
C403
D406
C404
VR12
XMT METER
T401
VR14
MOD
VR16
BIAS
S404
VR1
REC METER
VR15
BIAS

CHASSIS - TOP

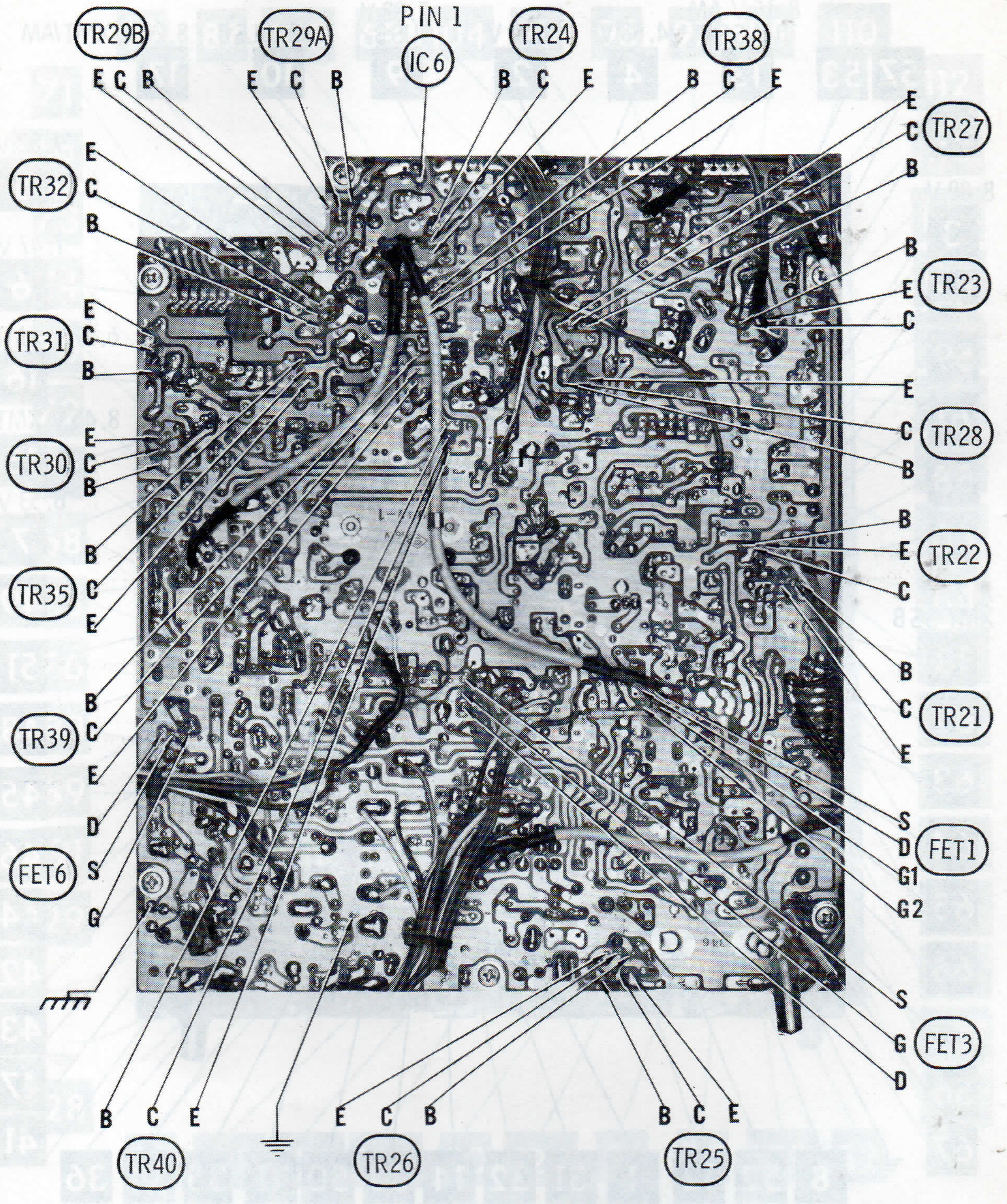

33 MHz
L24
7.7975 MHz
CT3
7.8025 MHz
CT2
34.9875 MHz
CT4
34.9825 MHz
CT5
TP8
L16
L17
34.9850 MHz
CT6
TP9
7.8 MHz
L6
7.8 MHz
L5
TP5
23.5 MHz
L2
27 MHz
L4
23.5 MHz
L1
27 MHz
L3
AM REG
VR8
54 MHz
MIN
L27
CT7
L30
TP1
27 MHz
TP7
TP6
7.8 MHz
L7
7.8 MHz
L39
27 MHz
L37
7.8 MHz
L8
CT1
TP4
TP3
TP2
27 MHz
L32

CHASSIS - TOP

A Howard W. Sams **CIRCUITRACE®** Photo

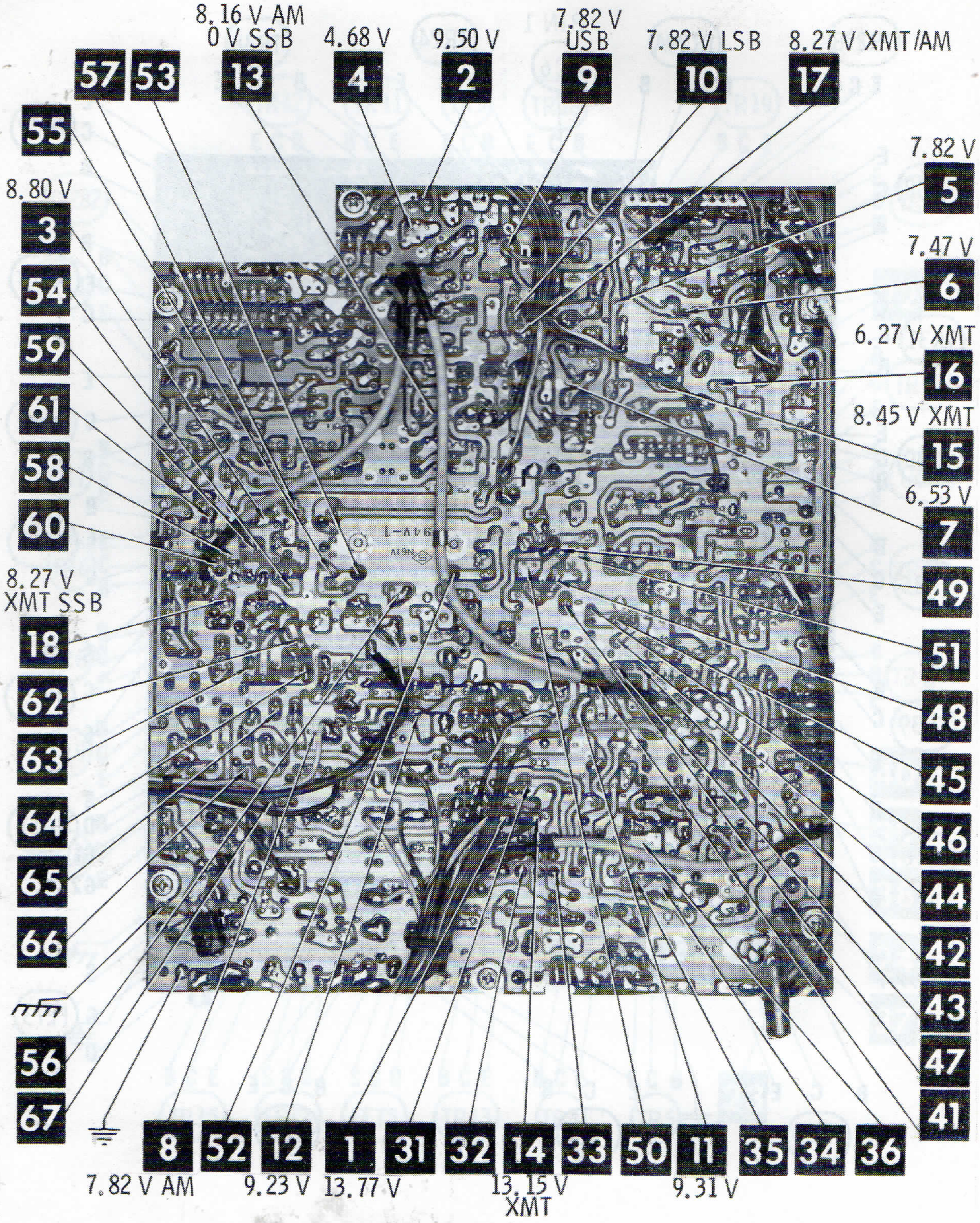


MAIN BOARD


TR29B E C B
TR29A E C B
PIN 1 IC6
TR24 B C E
TR38 B C E
TR27 E C B
TR32 E C B
TR31 E C B
TR23 B E C
TR28 E C B
TR30 E C B
TR22 B E C
TR35 B C E
TR21 B C E
TR39 B C E
FET1 S D G1 G2
FET6 D S G
FET3 S G D
TR40 B C E
TR26 E C B
TR25 B C E

MAIN BOARD

A Howard W. Sams CIRCUITRACE® Photo



MAIN BOARD

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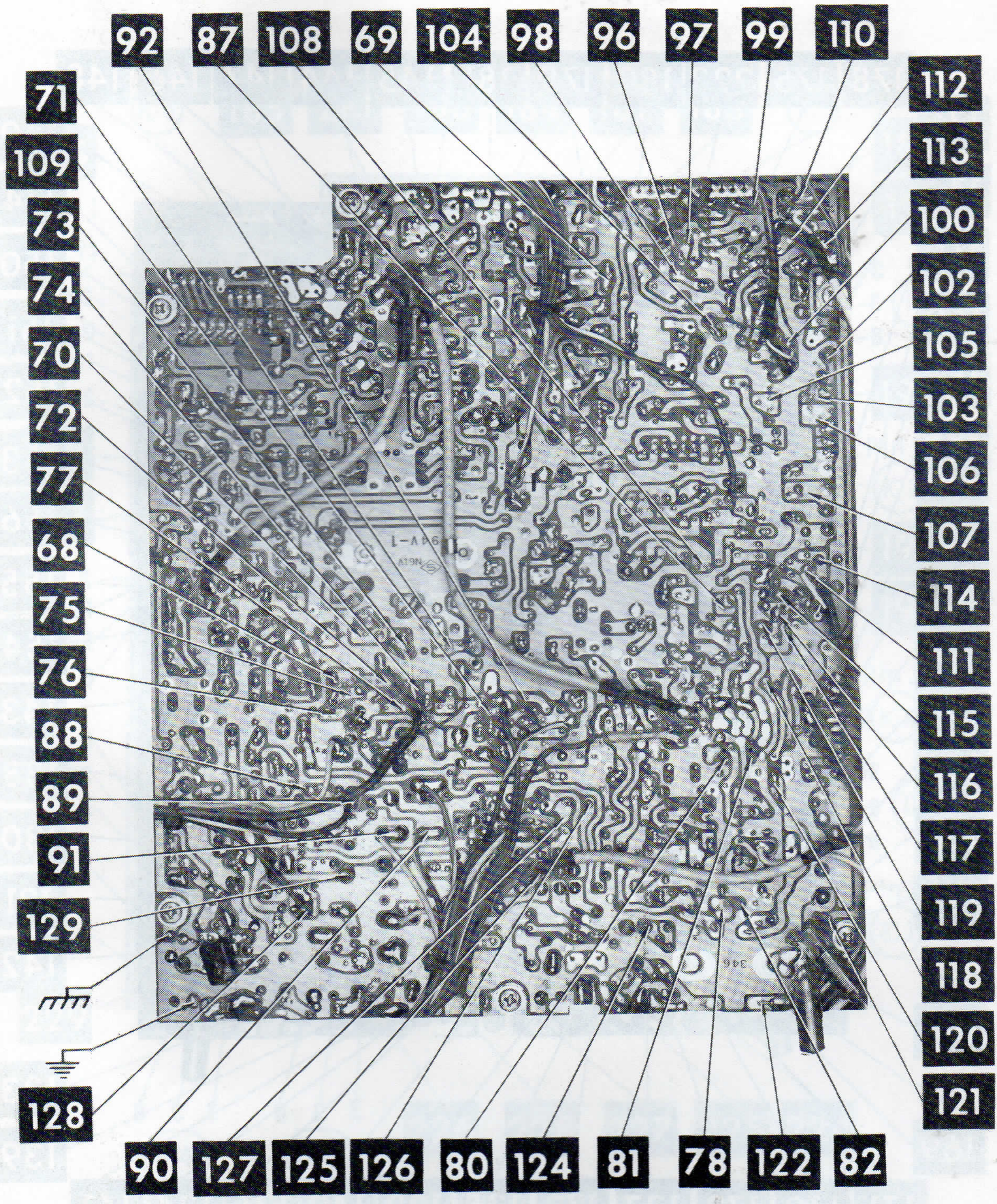

MAIN BOARD

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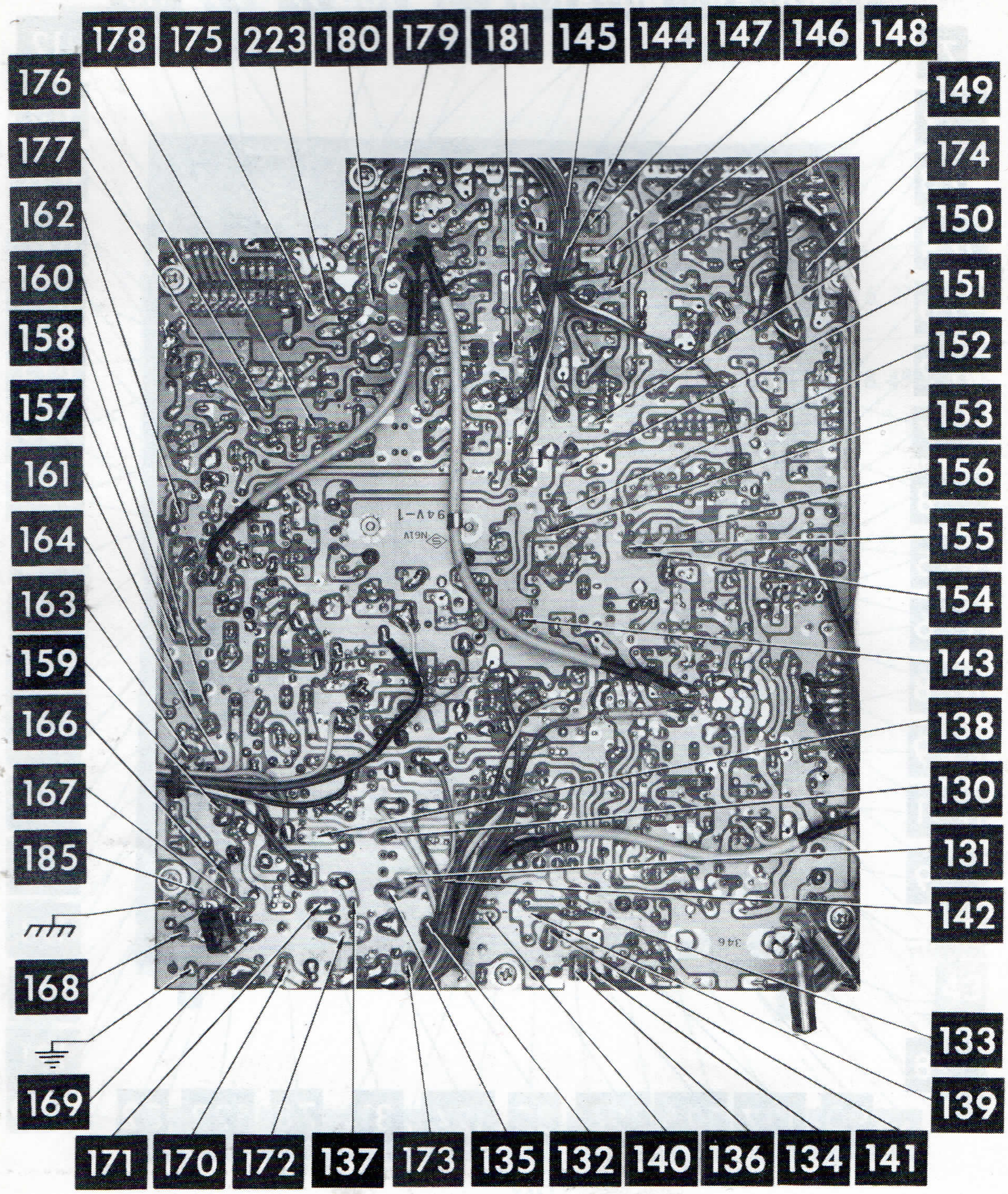
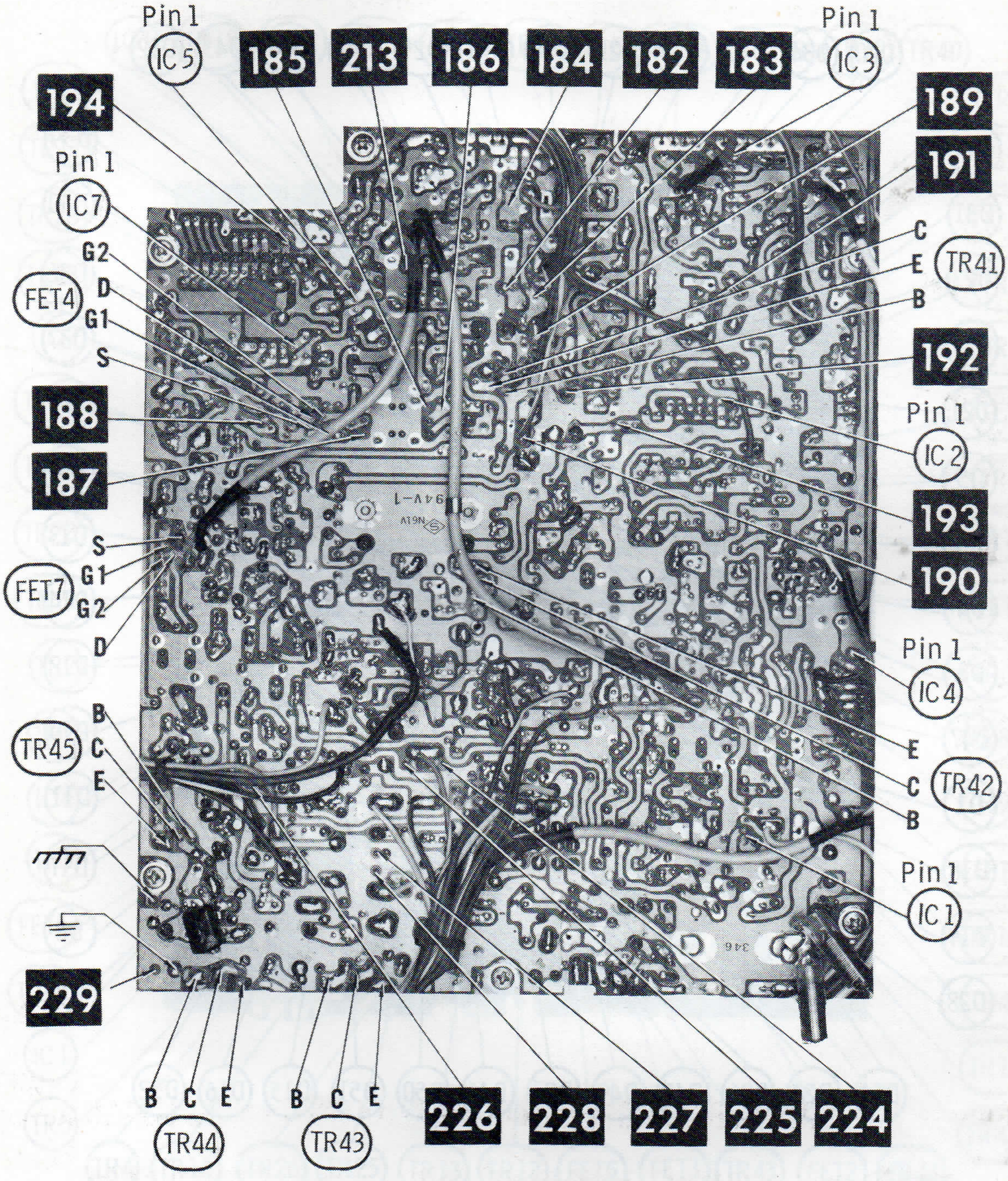
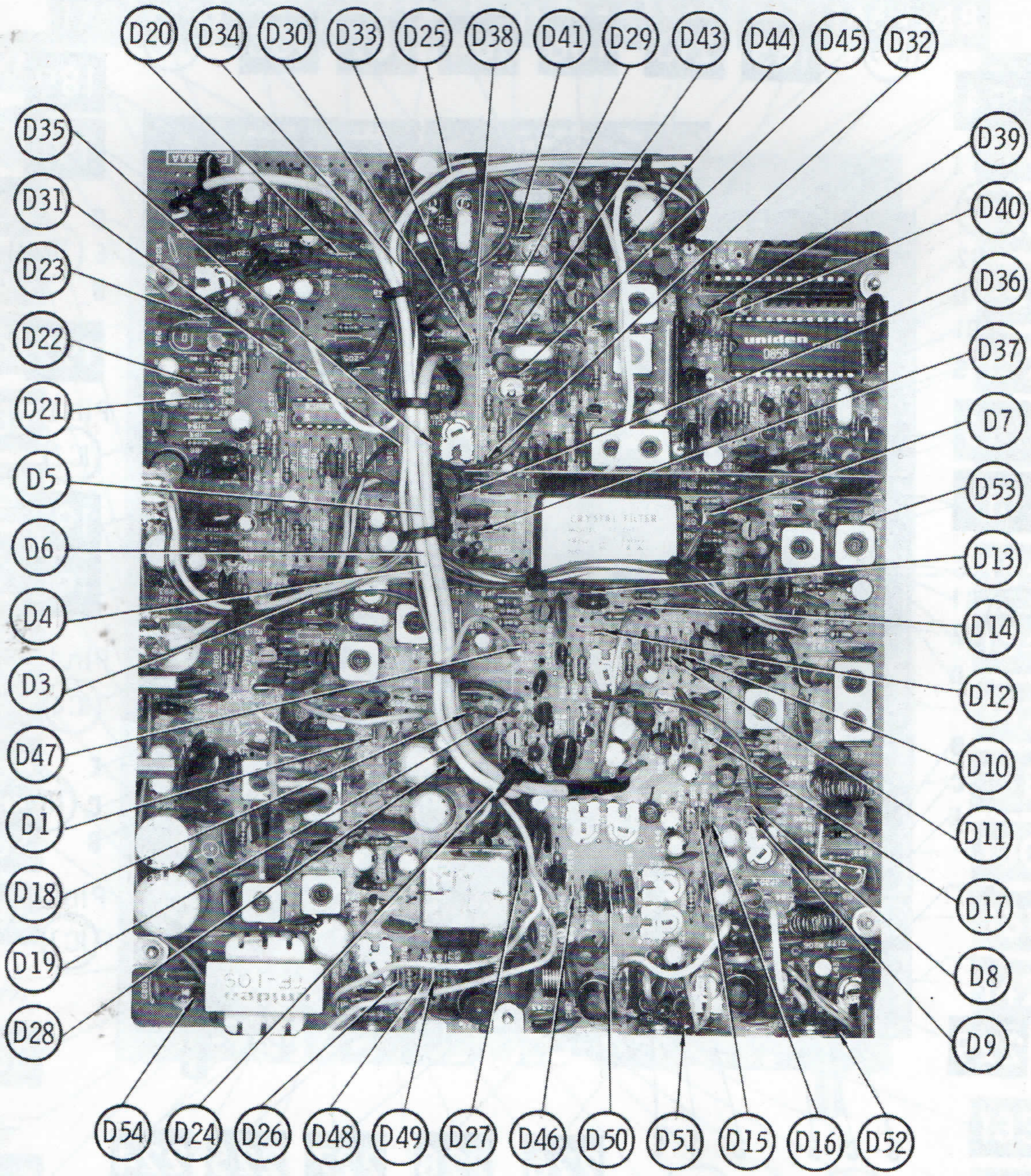


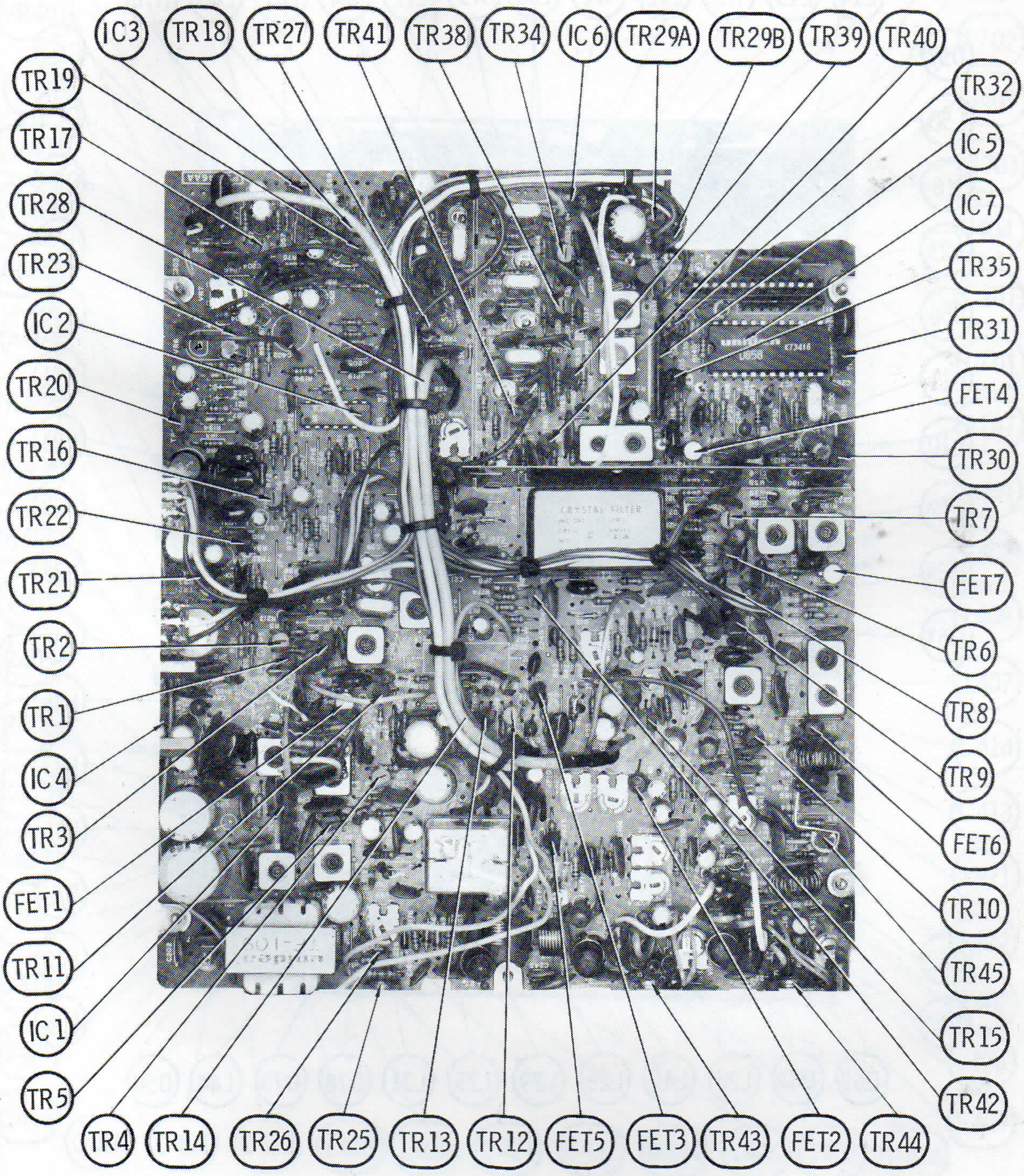
MAIN BOARD


Pin 1
IC5
185
213
186
184
182
183
Pin 1
IC3
194
189
191
Pin 1
IC7
C
E
TR41
B
G2
D
FET4
G1
S
192
188
Pin 1
IC2
187
193
190
S
G1
FET7
G2
D
Pin 1
IC4
B
TR45
C
E
E
C
TR42
B
Pin 1
IC1
229
B
C
E
TR44
B
C
E
TR43
226
228
227
225
224

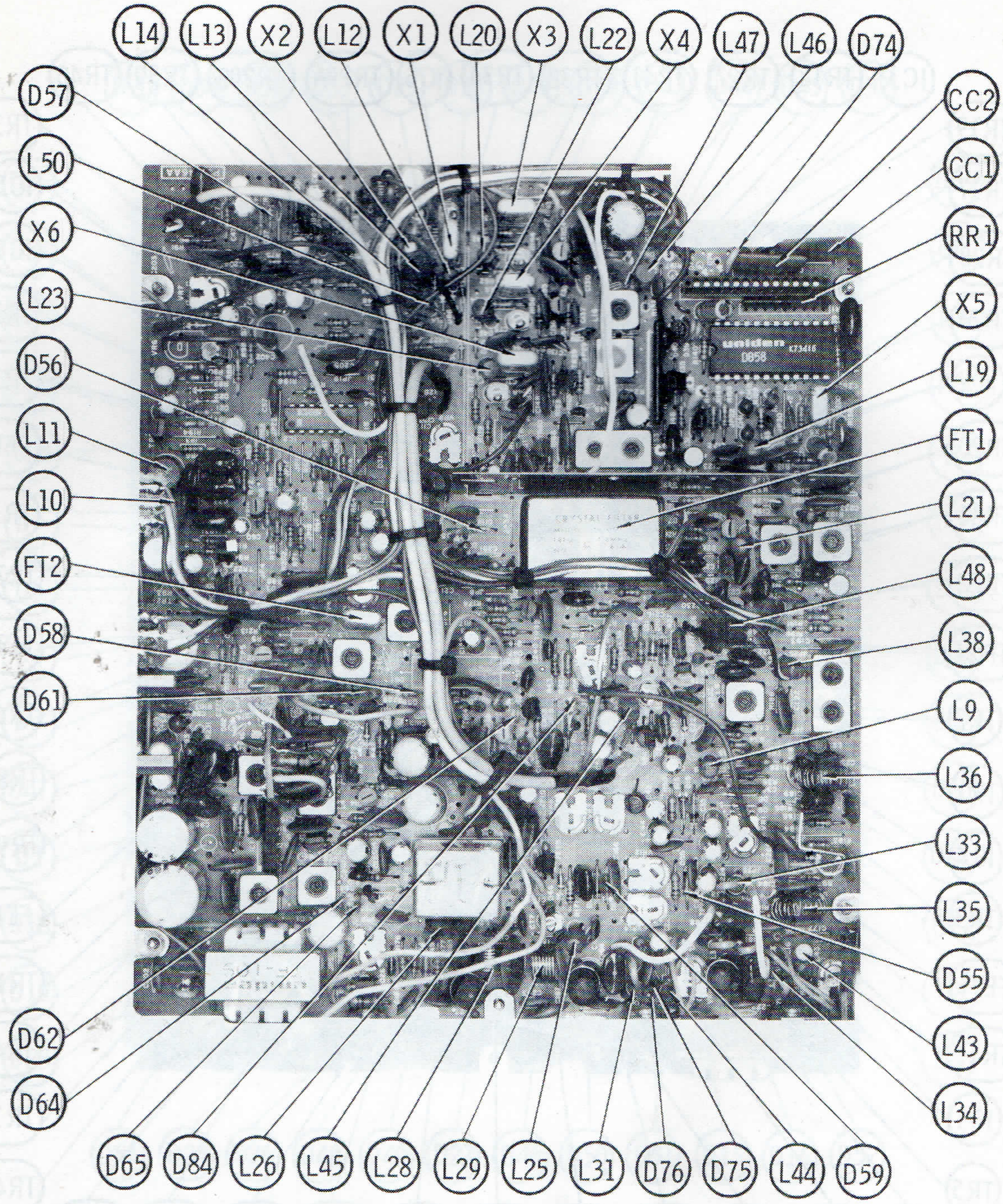
MAIN BOARD


D20
D34
D30
D33
D25
D38
D41
D29
D43
D44
D45
D32
D35
D31
D23
D22
D21
D5
D6
D4
D3
D47
D1
D18
D19
D28
D39
D40
D36
D37
D7
D53
D13
D14
D12
D10
D11
D17
D8
D9
D54
D24
D26
D48
D49
D27
D46
D50
D51
D15
D16
D52
CRYSTAL FILTER
uniden
D858

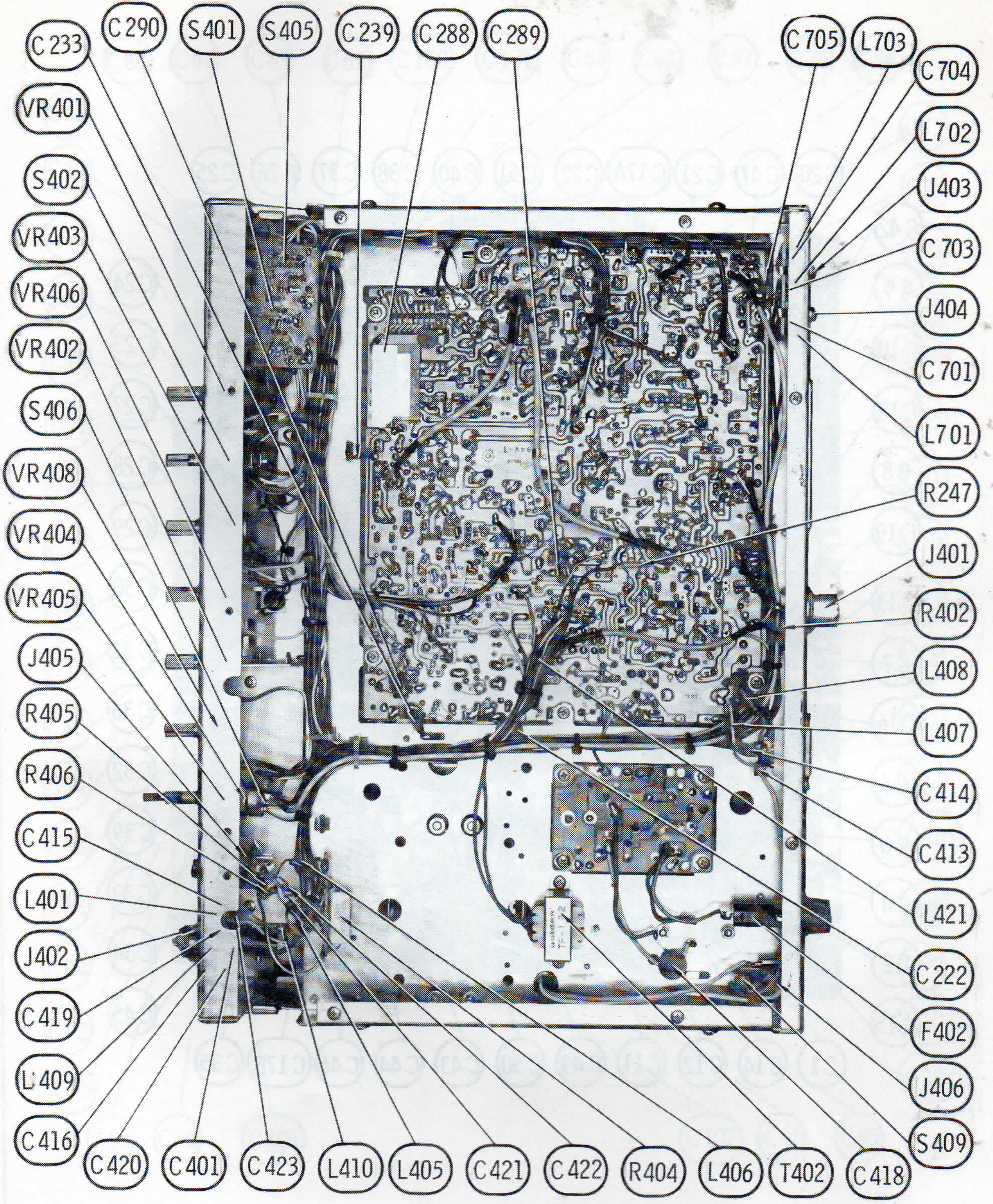
MAIN BOARD


IC3
TR18
TR27
TR41
TR38
TR34
IC6
TR29A
TR29B
TR39
TR40
TR19
TR17
TR28
TR23
IC2
TR20
TR16
TR22
TR21
TR2
TR1
IC4
TR3
FET1
TR11
IC1
TR5
TR32
IC5
IC7
TR35
TR31
FET4
TR30
TR7
FET7
TR6
TR8
TR9
FET6
TR10
TR45
TR15
TR42
TR4
TR14
TR26
TR25
TR13
TR12
FET5
FET3
TR43
FET2
TR44

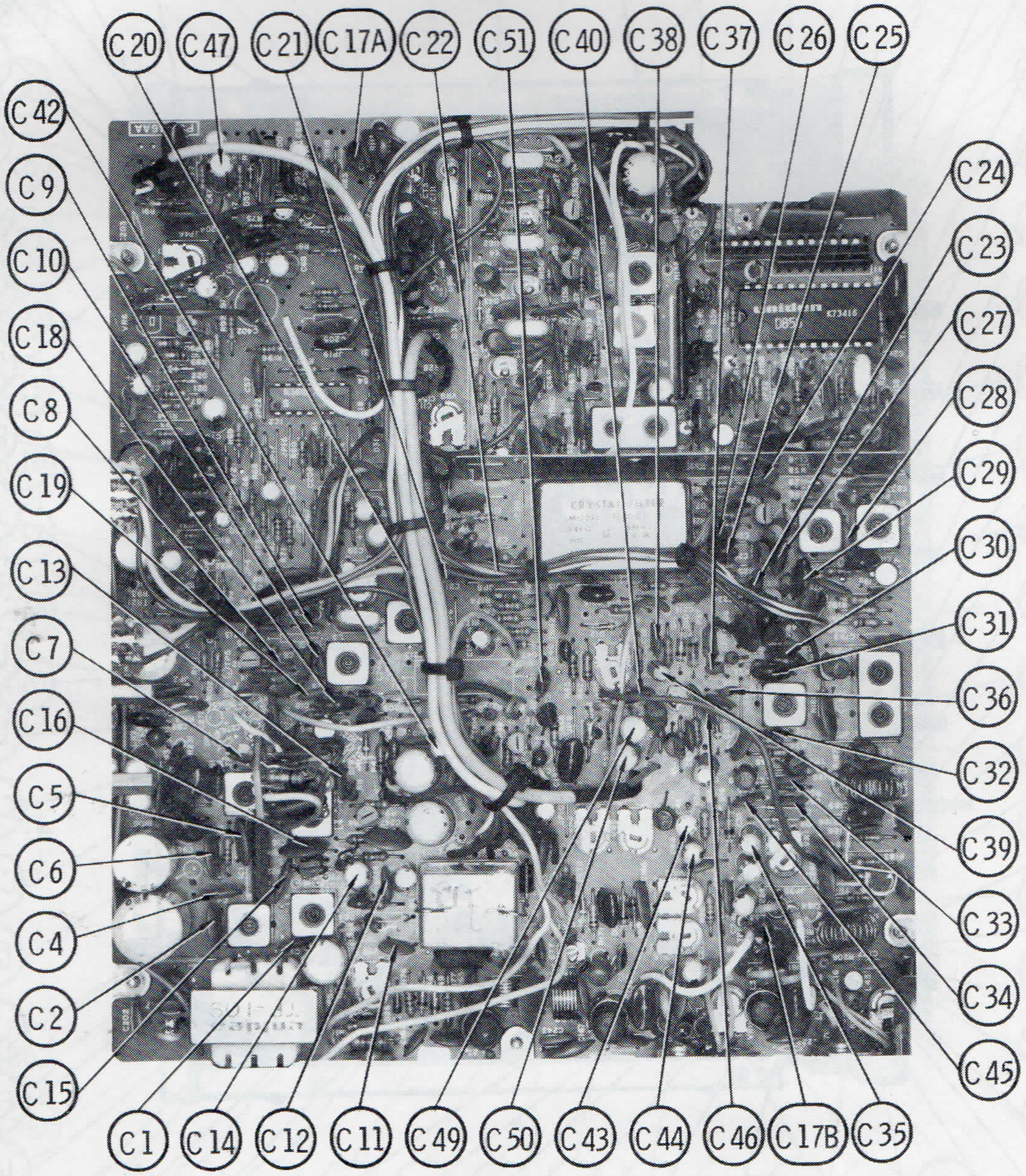
MAIN BOARD


L14
L13
X2
L12
X1
L20
X3
L22
X4
L47
L46
D74
D57
CC2
L50
CC1
X6
RR1
L23
X5
D56
L19
L11
FT1
L10
L21
FT2
L48
D58
L38
D61
L9
L36
L33
L35
D55
D62
L43
D64
L34
D65
D84
L26
L45
L28
L29
L25
L31
D76
D75
L44
D59

MAIN BOARD


C233
C290
S401
S405
C239
C288
C289
C705
L703
C704
VR401
S402
VR403
VR406
VR402
S406
VR408
VR404
VR405
J405
R405
R406
C415
L401
J402
C419
L409
C416
C420
C401
C423
L410
L405
C421
C422
R404
L406
T402
C418
L702
J403
C703
J404
C701
L701
R247
J401
R402
L408
L407
C414
C413
L421
C222
F402
J406
S409

MAIN BOARD


C20
C47
C21
C17A
C22
C51
C40
C38
C37
C26
C25
C42
C9
C10
C18
C8
C19
C13
C7
C16
C5
C6
C4
C2
C15
C24
C23
C27
C28
C29
C30
C31
C36
C32
C39
C33
C34
C45
C1
C14
C12
C11
C49
C50
C43
C44
C46
C17B
C35

MAIN BOARD